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ABSTRACT

The developmental psychology literature has focused on strategy use and comprehension monitoring of children performing simple memory tasks; however, less attention has been given to the same factors in older subjects engaged in more complex cognitive tasks. In order to evaluate study strategy effectiveness, and students' ability to self-monitor their level of comprehension of course material, 26 undergraduates were asked to complete a questionnaire prior to each of the four exams given during one course. The questionnaire elicited information about time spent studying, study strategies used, use of the study guide, perceived readiness, days absent, year in school (freshman, sophomore, etc.) and predicted grade. Results indicated that type of study strategies used was most consistently related to actual grade on the exams. Scores on the test, however, were unrelated to students' perceptions of their readiness for exams, suggesting inaccuracy in comprehension monitoring. Implications for future research include verifying the relationship between type of strategies used and actual test performance. (The questionnaire and exam scores are appended.) (LLL)

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Study Strategy Use and Comprehension Monitoring Accuracy of College Students

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CG 017842

Running head: STUDY STRATEGY USE

Abstract

Using an approach based on theories and methodologies from developmental psychology, the present study examined the performance of college students on complex cognitive tasks. Twenty-six students in a course in Educational Psychology were asked to complete a questionnaire regarding their test preparation prior to taking each of the four course exams. The type of study strategies reportedly used was consistently found to be related to test performance. The scores on the test, however, were unrelated to students' perceptions of their readiness for the exam, thus suggesting inaccuracy in comprehension monitoring.

Study Strategy Use and Comprehension Monitoring Accuracy of College Students

The developmental psychology literature has focused on strategy use and comprehension monitoring of children performing simple memory tasks. Less attention, however, has been given to the same factors in older subjects engaged in more complex cognitive tasks. Similar methodologies and theories, however, would appear to apply.

A phenomenon of interest is college students who say they have studied for an exam, think they know the material, but still do poorly on the test. Work of Flavell, Friedrichs, and Hoyt (1970) and Brown and Barclay (1976) in the developmental literature would suggest that some type of anticipation/rehearsal or self-testing strategy might lead to better performance than just repeatedly going over the material (Andre & Anderson, 1978/1979). Moreover, whether or not the students are accurately able to assess their readiness for an exam might depend, as Markman (1979) has suggested, on whether or not students use some type of deliberate analysis to assess whether or not they have understood the material. For example, possibly a person is able to more accurately assess his or her readiness for an exam if he or she uses a self-testing approach to studying rather than some less structured plan.

The present study evaluates the study preparation of a class of college students. Of particular interest was the effectiveness of the study strategies used, the accuracy with

which the students were able to monitor their level of comprehension of the material, and the relationship between study strategies and how they monitored their comprehension.

Method

Subjects

The subjects in this study were 26 students, 24 females and 2 males, taking an undergraduate course in Educational psychology. The majority of the students taking this course were doing so to meet teacher certification requirements thus accounting for the high percentage of females. The course was a combination of lecture and discussion. Four short answer and multiple choice exams were given in the course with examination material coming both from lectures and the text book.

Procedure

Prior to each of the four exams given during the course, the students were asked to complete a questionnaire that was designed to assess a number of factors concerning their preparation for the test. They were told that their responses to the questionnaire would in no way influence their grade, rather that the purpose was to help them learn about how test preparation relates to test performance. In addition, the students were told that they would be given the results of the questionnaire a few days after the exam along with an explanation of their meaning.

Materials

The same basic questionnaire was used for each of the four exams with a few minor wording changes after the first one to make the wording more appropriate. The questionnaire is presented in Table 1. First, students were asked how many hours they spent reading the chapters in the text the first time they read them and second, how many hours they spent studying beyond merely reading the chapters the first time. Third, the students were asked what they did to learn the material for the exam, that is, how they went about studying. Fourth, they were asked whether or not they had used the study guide that went along with the text. Fifth, the students were asked to indicate whether or not they felt prepared for the exam and if so, how they knew they had studied enough. Sixth, they were asked how many times, if any, they had missed class since the previous exam. Seventh, they were asked to predict what their score would be on the exam. Finally, the students were asked to indicate their year in school. After the exam, their actual grade on the exam was recorded along with their responses to the questionnaire.

Insert Table 1 about here

Rationale

The question regarding what students did to learn the material for the exam was used to evaluate the types of study

strategies used. Responses were rated on a scale of effectiveness from 0 (i.e., almost no systematic study) to 3 (i.e., clear use of some type of self-testing, not just mere repetition). Use of the study guide was also presumed to give some, although less direct insight into the type of study strategies used. The study guide was assumed to provide a possible structured means for self-testing, though in all probability some of the students did not use the study guide in that way when they did use it. Thus, the exact strategies could be more clearly determined from the third question.

The answer to the question regarding whether or not the students felt prepared for the exam was used to assess the students' perceived readiness for the exam, a measure that was presumed would reflect their ability to monitor their comprehension. For example, if a student said that he or she was ready for the exam and obtained a high score, then his or her comprehension monitoring was considered to be accurate.

On the question regarding how the students knew when they had studied enough for the exam, a question intended to determine how students were monitoring their comprehension, responses were often incomplete and thus could not be included in the analysis. Consequently, no determination could be made of whether or not students were using some type of deliberate analysis to assess whether or not they understood the material.

Finally, it was presumed that the predicted grade would

provide another means, though somewhat less direct, of assessing the accuracy of the students' comprehension monitoring. For example, if the student predicted that he or she would receive a low grade and actually did, then the accuracy of comprehension monitoring was considered to be high.

Results

Because of the small number of subjects in this study (i.e., 26 for Exams 1, 3, and 4 and 23 for Exam 2), the discussion will focus primarily on the simple correlations. Unfortunately, this approach is somewhat problematic in light of the high intercorrelations of the variables. Thus, the conclusions reached from this data must be considered tentative.

Of particular interest were the variables that were significantly related to the actual grade on the exams. Variable that were assessed were (1) total hours spent studying (a measure derived from questions 1 and 2), (2) type of study strategies used, (3) use of the study guide, (4) perceived readiness, (5) days absent, (6) class, and (7) predicted grade.

As can be seen from Table 2, for Exam 1, type of strategies used, use of the study guide, and class were the only variables significantly related to actual grade. For Exam 2, total hours spent studying, type of strategies used, use of the study guide, and predicted grade were significantly related to actual grade. It should be noted

that by the second exam, only one person did not use the study guide but did receive the lowest score on the exam. For Exam 3, type of strategies used and days missed were significantly related to actual grade. For Exam 4, hours spent studying, type of study strategies used, days missed, and predicted grade were significantly related to actual grade.

Insert Table 2 about here

Subsequent to the analysis of the correlations, multiple regression analyses were performed for each exam using as independent variables those variables that had been found to be significantly correlated to actual grade. The one exception was that use of the study guide was omitted from the analysis for Exam 2 due to the limited variance in that variable.

For Exam 1, the multiple regression analysis predicting actual grade from type of study strategies used, use of the study guide, and class was significant, $R = .58$, $F\ (3, 22) = 3.67$, $p = .03$. For Exam 2, regression analysis indicated that total hours spent studying, type of study strategies used, and predicted grade significantly predicted actual grade, $R = .61$, $F\ (3, 19) = 3.70$, $p = .03$. For Exam 3, the multiple regression analysis predicting actual grade from type of study strategies used and days missed was significant, $R = .54$, $F\ (2, 23) = 4.76$, $p = .02$. For Exam 4

regression analysis indicated that total hours spent studying, type of study strategies used, days missed, and predicted grade significantly predicted actual grade, $R = .81$, $F\ (4, 21) = 9.71$, $p = .0001$. For the four different exams, the set of independent variables accounted for 33%, 37%, 29%, and 65%, respectively, of the variance in actual grade.

Discussion

The one variable most consistently found to relate to actual grade on the exam was the type of study strategies used. The results suggest that students who employ more effective study strategies are likely to perform better on tests. Of particular interest, however, is that even though students were informed after each exam that use of a self-testing strategy appeared to be associated with good performance and that of less elaborate strategies such as more repetition appeared to be associated with poorer performance, mean scores for type of strategies used remained relatively unchanged (i.e., 2.03, 1.95, 2.07, and 1.88, respectively, for the four exams). Possibly more students would have adopted a self-testing strategy had they been specifically trained to do so. Research by Andre and Anderson (1978-79) supports this hypothesis.

The results also indicate a lack of relationship between students' assessments of their readiness for exams and their actual grades, thus suggesting inaccuracy in their monitoring of their comprehension. However, how students predicted they

would do (i.e., a variable described as a less direct measure of comprehension monitoring) for two exams was related to actual grade and in fact was also significantly related to perceived readiness for three of the four exams. These results are not as clear as would be desired. Perhaps, had usable information been obtained on how the students knew when they had studied enough, the exact relationship between type of study strategies used and comprehension monitoring would have been clearer.

While the limitations of this study must be acknowledged in terms of the small number of subjects and the problems associated with using self-report techniques, it does suggest some directions for future research. Using larger samples, an attempt should be made to verify the relationship between the type of strategies used and actual test performance. In addition, precisely how students monitor the state of their comprehension and whether or not this comprehension monitoring is related to the type of study strategies used needs to be investigated. Such information would begin to provide insight into the phenomenon of students thinking they are ready for an exam and their grades suggesting they are not.

Andre, M. D. A., & Anderson, T. H. (1978/1979). The development and evaluation of a self-questioning study technique. Reading Research Quarterly, 14, 605-623.

Brown, A. L., & Barclay, C. R. (1976). The effects of training specific mnemonics on the metamneumonic effeciency of retarded children. Child Development, 74, 71-80.

Flavell, J. H., Friedrichs, A. G., & Hoyt, J. D. (1970). Developmental changes in memorization processes. Cognitive Psychology, 1, 324-340.

Markman, E. M. (1979). Realizing that you don't understand: Elementary school children's awareness of inconsistencies. Child Developmnet, 50, 643-655.

Questionnaire Used to Assess Test Preparation

Name:_____

Questionnaire

The purpose of the following questionnaire is to gain insight into students' study havits. I will be asking similar questions before each exam. Your responses will have absolutely no influence on your grade. I only ask for your name on this sheet as a way for me to match this data with that from subsequent exams. Please be as honest as you can with your responses. I will be reporting the results to you after each exam.

1. How many hours did you spend reading the chapters in the text the first time through? _____

2. How many hours did you study for the exam beyond merely reading the chapters the first time? _____

3. What did you do to learn the material for the exam, that is, how did you go about studying? Please be as specific as possible.

4. Did you use the study guide? Yes _____ No _____

5. Do you feel like you are prepared for this exam?
Yes _____ No _____
If you do feel like you are prepared for the exam, how did you know when you had studied enough (i.e., how did you know when to stop studying)?

6. How many times have you missed this class since the last exam, if any? _____

7. Out of the 100 possible points on this test, what do you think your score will be? _____ Please give a single number not a range.

8. What is your year in school (i.e., freshman, sophomore, etc.)? _____

...d Actual Grade for the Four Exams

		Hours Studying	Strategies Used	Study Guide	Readiness	Days Absent	Class	Actual Grade
Strategies Used	1)	.01						
	2)	.54**						
	3)	.16						
	4)	.33						
Study Guide	1)	.27	.48*					
	2)	.17	-.02					
	3)	.20	.45*					
	4)	---	---					
Readiness	1)	.34	.38	.14				
	2)	.32	.40	.24				
	3)	-.17	.14	.23				
	4)	.02	.37	---				
Days Absent	1)	-.08	.32	.15	.26			
	2)	-.27	-.39	-.30	.00			
	3)	-.38	-.29	-.12	.10			
	4)	-.30	-.36	---	-.38			
Class	1)	.46*	.29	.21	.14	-.11		
	2)	.61**	.32	-.02	.41*	-.06		
	3)	.51**	.27	.20	-.12	-.03		
	4)	.45*	.18	---	.08	-.11		
Actual Grade	1)	.18	.45*	.43*	.34	-.22	.41*	
	2)	.48*	.44*	.52**	.32	-.36	.36	
	3)	.29	.42*	-.10	.15	-.44*	.23	
	4)	.58*	.48*	---	.36	-.52*	.32	
Predicted	1)	-.01	.62**	.14	.58**	.27	-.04	.35
	2)	.16	.29	.23	.40	-.03	.37	.42*
	3)	.07	.29	.22	.76**	-.03	.14	.36
	4)	.33	.51*	---	.56**	-.32	.11	.66**

*p <.05. **p <.01.